

# Dolores Watershed Briefing - 7/14/04

  
1764979 - R8 SDMS

## **Background**

The Dolores River Watershed includes the Dolores River from its headwaters down to and including McPhee Reservoir and all of its tributaries.

## **Problem**

McPhee Reservoir, at the lowest point of the watershed, has been listed on the 303(d) list of impaired waters due to high mercury levels in fish resulting in a fish advisory. The cause(s) of mercury problems in the Dolores Watershed is (are) not currently known. The most likely mercury sources include: abandoned mines, atmospheric deposition, natural background from mineralized soils, irrigation return flows, and releases associated with oil/gas exploration and/or operations.

## **Previous Sampling efforts**

The Colorado Division of Wildlife (CDOW) and the U.S. Fish and Wildlife Service (USFWS) have documented elevated mercury in fish from McPhee Reservoir repeatedly in investigations conducted in 1989 through 2004. Sampling in 1999 by Tetra Tech Inc. produced an initial estimate of mercury loading rates by sub-basin for CDPHE, with the assistance of EPA, for use in the development of a Total Maximum Daily Load (TMDL) for mercury for the McPhee Reservoir. Elevated mercury levels in precipitation, snow, mining wastes and surface waters have been documented by the US Park Service (NPS), US Bureau of Reclamation (BOR) and EPA contractors, respectively. The most recent PA/SI in Rico, however, did not show mercury in the waters but only in soils. Leachate tests on the Van Winkle shaft waste rock piles, conducted by EPA's Office of Research and Development (ORD) to calibrate various leachate methodologies, showed high mercury levels in all of the tests. ARGO's report, received this week by CDPHE, shows mercury loading from the combined sources of the St. Louis adit, Silver Creek and other adits and seeps but contains no actual data.

## **April 2004 Sampling Effort**

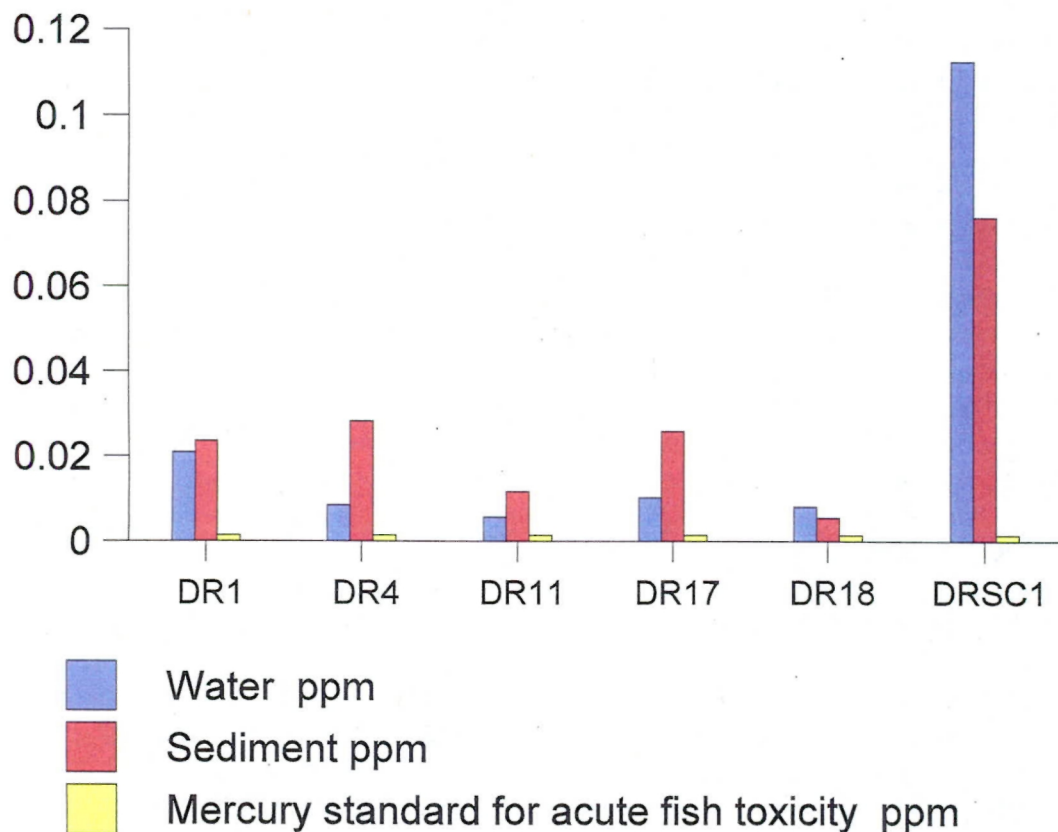
The most recent sampling effort was planned for over a year and conducted by EPA in cooperation with CDPHE, USFS, USGS, NPS, BOR and local stakeholders. The purpose of the sampling effort was to sample and characterize the existing Upper Dolores Watershed water quality, sediment and macro-invertebrate communities and to identify potential sources and sinks of mercury and other metals.

## **Preliminary Results**

Data from this effort have not been through a complete Qa/Qc evaluation. Therefore, the results are only preliminary and not for public distribution. There appears to be a high level of mercury throughout the watershed as shown on the following table. Sources of mercury could be from general geological conditions or from air deposition. The BOR has found very high levels of mercury in snow from the Lizard Head pass area at the headwaters of the Dolores River. Thus, air deposition is the most likely source at the watershed level. Also, mercury levels in Silver Creek near the confluence with the Dolores River are approximately ten times higher than the surrounding area, but no source was identified. Additional research is recommended.

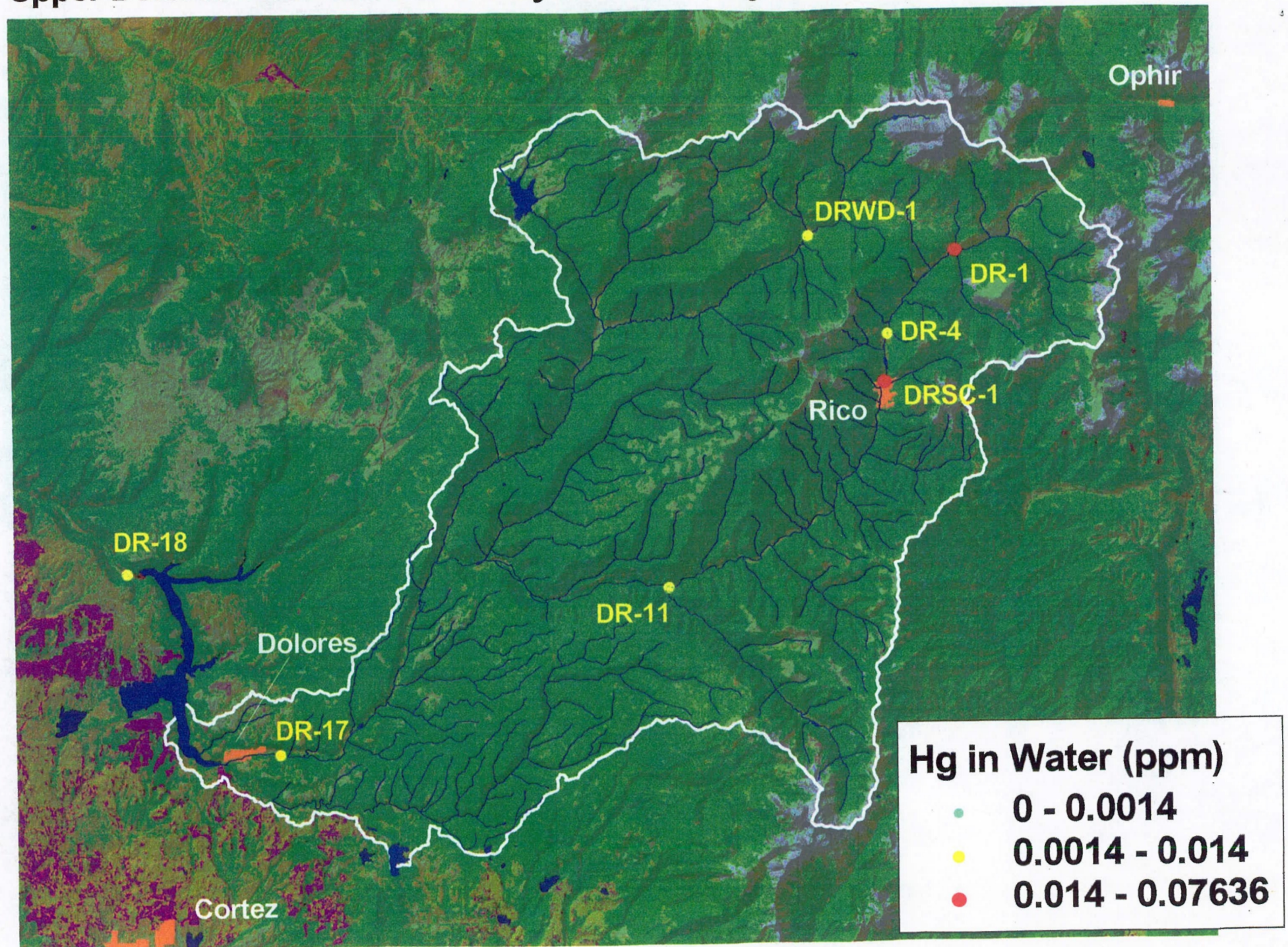
# Preliminary Mercury Sampling Results 4/04

Sample # ORD- Cincinnati	Dolores River Sampling Sites Upstream to Downstream and the Tributary of Silver Creek	Mercury - Hg human DW fish acute / chronic ppm	In Water total Hg ppm	In Sediment total Hg ppm
DR-1	Barlow Creek at the Bridge in the USFS Cayton Campground	0.002 0.0014 0.00077	0.02095	0.02358
DR-4	Dolores River at mile marker 49.5 Station is upstream of Rico between tight curve in the road and mile marker 50 upstream of the town of Rico.		0.00845	0.02824
DR-11	Dolores River at the USGS Rico Gaging Station		0.00561	0.01168
DR-17.	Dolores River where it enters McPhee Reservoir at USGS Gaging Station, Dolores Town Park		0.01026	0.02589
DR - 18	Dolores River at the discharge of McPhee Reservoir.		0.00807	0.0055
DRSC-1	Silver Creek at the confluence w/ Dolores within the Rico Town limits		0.11277	0.07636





# Upper Dolores Watershed with May 2004 Mercury in Water Monitoring





So you will notice that the previous slides emphasized MeHg (4)

# Mercury Species

## Not All Mercury is Created Equal

- Methylmercury (MeHg)
- Bioaccumulative/Toxic
- Elemental mercury (Hg) — Soils
- Non-bioaccumulative/Non-toxic
- Hg(II) : all mercury that is neither MeHg nor elemental
- Important in fate and transport but not usually a strong component of either bioaccumulation or toxicity